

the species to Mr. Boulenger, as a slight recognition of the impetus which he has given to herpetological science by formulating a definite method for the description of the species belonging to this interesting sub-order.

REPORT OF A COLLECTING TRIP TO MOUNT KOSCIUSKO.

BY RICHARD HELMS.

(Abridged from his Report to the Curator.)

LEAVING Sydney on the 5th February by night train, and reaching Michelago about 7 a.m., I proceeded without delay by coach to Cooma. On account of the boisterous weather of the previous night the roads were very bad, and the prospect of success in my undertaking, which almost entirely depended on fine weather, was therefore not very hopeful. All my boxes got saturated, which compelled me to unpack them to prevent the contents getting spoiled. This increased my discomfort, for anxious as I was to make my tour a success, particularly as it was my first for your Institution, the outset was so discouraging that it almost disheartened me. Moreover everyone predicted a long continuance of bad weather, this having been the usual experience in that part of the country after the breaking up of a long dry season. It is pleasing to relate, therefore, that since I left Cooma only a few rainy days have stopped my collecting, but I was at a great disadvantage in reaching the field of operations at such a late time of the season, when most of the shrubs and trees were past flowering. Another disadvantage was that I reached Jindabyne, the last settlement near the mountains at a time when everyone was engaged in harvesting, and consequently a considerable difficulty arose about getting a guide and packhorses to enable me to push on at once to the highest peaks of the range. I am however doubtful whether after all much has been lost, for whilst waiting to get a guide, &c., I put my time in well at another place, and what I missed from the highest altitudes, I gained in extra numbers where I collected, many of which also proved highly interesting. To collect successfully at these high altitudes, it is my opinion one ought to be there before the beginning of January, and stay at least during the whole of that month, when the floral development displays its greatest luxuriance. The high winds which commonly prevail at altitudes above 4,000 feet, are very detrimental to successful collecting; but occasionally almost dead calms are experienced, and during such periods insect life appears abundant.

After three days stay at Cooma, where I collected as much as the broken weather would permit, I started on Saturday, 9th February, for Jindabyne, which was reached at 3 a.m. on Sunday, 10th February. Jindabyne is very pleasantly situated on the eastern bank of the Snowy River, about 26 miles from the highest peaks of the Australian Alps. The neighbourhood at one time must have been excellent collecting ground, but at present is much deteriorated owing to the denudation of the forest lands, and by ring-barking; however, a good number of insects of all the orders were obtained, particularly some fine *Hymenoptera*. After a few days collecting about Jindabyne, I went to a place on the upper Moonbar River, having been informed of the occurrence of numbers of butterflies. This information proved correct, but although the *Lepidoptera* were much knocked about and many quite worthless, a fair number of good specimens, and many other interesting Insects were obtained. My instructions being to ascend the ranges, brought me back to Jindabyne.

After several unsuccessful attempts I obtained a good guide, with packhorses, &c., and started on Sunday, 3rd March. The road, after crossing the Snowy River, leads through Mr. Body's run till the Crackenbac, better known as the Threadbaw River, is crossed, not far from its junction with the former. Here at Mr. Spencer's old station "Westpoint," mentioned in Dr. Lendenfeld's Report, a rest was made, and from thence for a considerable time we followed his route. For some seven miles there is a splendid track, formerly used by bullock drays, and this part of the journey must have been in Dr. Lendenfeld's mind when he made the assertion that he could drive a carriage to Mt. Kosciusko. At a place called Wilson's Valley this fine track ceases, and from thence it is utterly impossible to proceed except on foot or horseback. The rises, hitherto with but few exceptions having been gradual, occasionally now got very abrupt for short distances, while intervening bogs and thick scrub made it rather difficult to bring a pack on safely. We got on pretty well however, as the guide was a very careful man and the horse very docile. Just before sundown we reached Tom's Flat, and camped for the night. During the day I dismounted many times and obtained a few good insects, and at night I got several specimens of *Galaxias* in the creek near the camp by the aid of a lantern. Next morning an early start was made, and we reached a camping place at an altitude of about 6,600 feet, and the next day reached the highest peaks. The place we camped at was on the margin of the scantily timbered part of the country, opposite the eastern "butt" of the "Perisher," a desolate rugged mountain range nearly surrounded by water, two different branches of the Snowy River closely flanking it. In ascending to Mts. Townsend and Kosciusko the scrub gets more

and more stunted, and the open is covered with a thick sward of tussock grass, at times quite dense and from six to eight inches in height. Where the ground is not swampy and sour, it yields splendid pasturage, particularly for cattle. Only now and again some of the pretty alpine flowers are met with, mostly *Gentians* (*G. montana*) and *Heliochrysums*. The *Celmisias*, of which large patches are found, like many other alpine plants were past flowering, and had already shed their seeds. I managed to collect the seeds of about a dozen kinds, mostly *Composite*. On the whole with such a bleak day as we had, and at the time of the year, the higher parts of the ranges did not look very attractive. Much of the almost desert-like look was undoubtedly caused through the firing which had been carried on to an unusual extent during the long dry summer. On every peak half burned and dead scrub stared us in the face. We reached Mt. Townsend about half-past eleven, and Mt. Kosciusko an hour later.

Mt. Townsend is easily accessible, and in a northerly direction is connected with Mt. Clarke by a saddle. By turning to the left from Mt. Clarke over another saddle Mt. Kosciusko, or, as called by Dr. Lendenfeld, "Mueller's Peak," is reached. This peak, surmounted by a large cairn, affords a fine view and is the most frequently visited. It is somewhat surprising therefore that the error in Townsend's map of this interesting part has not been rectified (unless it has been done quite recently). I regretted very much that I had left Dr. Lendenfeld's Report at the camp, and therefore could not compare the map on the spot and correct it, which I would not care to do from memory. The error is that the Snowy River is made to flow from the saddle connecting Mt. Clarke with Mt. Kosciusko, whilst in reality it is plainly seen to flow into the Murray from the peak. Mt. Clarke on the contrary connects in a northerly direction by various lower peaks and saddles with the "Big Boogong," a very prominent mountain dividing the Snowy and Murray waters.

I was very desirous to obtain specimens of Natural History from these high elevations, but owing no doubt to the cold weather nothing was visible. Over the highest waterhole of Australia (7,000 feet altitude), at the foot of Mt. Kosciusko, a few dipterous insects were hovering, of which I secured about half-a-dozen, and in a pool a little lower in Wilkinson's Valley I found two species of frogs in a young state. Besides these only several kinds of seeds were collected here. The absence of *Galaxias* at this elevation struck me as peculiar. It is, however, remarkable that on the Snowy River side these fishes are met with almost everywhere.

From Mt. Kosciusko we somewhat retraced our steps through Wilkinson's Valley, and leaving Mt. Townsend on our right

crossed one of the permanent snowfields which are hanging everywhere on the south-east side of the highest ranges. Crossing a saddle that again divides the Snowy and Murray waters, by turning slightly to the left we reached the highest peak of the Ramshead Range, which from our position extends almost in a true easterly direction, and divides the Snowy and Crackenbac Rivers.

My aim was to obtain some "Boogongs," the native name for the moths which so abundantly occur on this range, and no doubt have given it its name. From descriptions I expected to find a large Sphinx, and was puzzled how such an insect could exist in such masses at this altitude and in a comparatively barren country. What I found was a Noctuid moth, an *Agrotis*,* probably the same as is found in New Zealand, and likely to be a cosmopolitan species. The first I discovered was sitting in a crevice, and as soon as I saw it I knew where to look for more. On lifting some of the stone slabs, split from the rock by frost, dozens scrambled away in all directions. I secured some fifty specimens, and but for the high wind might perhaps have caught many more. Why, at such an elevation (from 6,000 to 7,000 feet), millions of these insects should be found, is perhaps one of the most remarkable problems in the insect world. The conditions are by no means favorable, because sometimes during nearly seven months of the year the country is covered with snow, and when the summer comes immense numbers of birds pursue them, particularly the crows which may always be found by thousands about the rocks where the "Boogongs" congregate. In former years before rum and disease had diminished the aborigines, hundreds of them went regularly to the ranges "Boogonging," and lived for months on almost nothing but these insects, returning fat and with a polished skin. An informant, who has lived in Monaro for over forty-five years, told me as follows:—In October, as soon as the snow had melted on the lower ranges, small parties of blackfellows would in fine weather start for the rocks on the summit to get "Boogongs" (most likely hybernated examples), and perhaps return if the weather changed; but a great gathering usually took place about Christmas on the highest ranges, and for about two months a great feast of roasted moths would be held. He assured me he has seen corroborees of 500 to 700 aborigines on the mountains, in which the various tribes that took part were friendly, some of them coming from a great distance. Their method of catching these insects was both simple and effective. With a burning or smoldering bush they entered as far as possible the rents in the rocks, and by the heat and smoke stifled the thickly congregated insects sitting in the upper parts of the

*This species has been identified by Mr. Olliff as *Agrotis spina*, Gn., immense swarms of which appeared on the sea-board of Victoria and New South Wales in the early part of the present summer.—Ed.

cracks. The stupified and half singed insects were gathered on outstretched kangaroo skins, or on fine nets made of the fibre of the "Currajong" tree or the bark of a *Pimelia*, prepared with great care, expanded on two poles, and then conveyed to hot ashes wherein they were well stirred till done. The bodies would then be shrivelled to the size of a grain of wheat, and the number consumed by such an assemblage must have been considerable. The larvæ, from what I can see, must principally live upon the tussock grass, since that is the only plant in these regions which could possibly outlive the attack of such numbers of these voracious insects.

Towards evening we reached a place just below Pretty Point, which I had selected on my up journey, and in the choice of which I was not disappointed. On my way when crossing Tom's Flat I gave the glacier marked rock, spoken of in Dr. Lendenfeld's Report, a rapid but still careful examination, and cannot say that I discovered any distinct striae, such, for instance, as I had seen in New Zealand, nor had I seen any previously on the rocks in Wilkinson's Valley. There are certainly patches of polished surface to be found, but these in my opinion may easily be produced by less heavy friction than glacier action. I have found polished patches on several rocks, though not so large as those on the rock on Tom's Flat, and almost feel inclined to attribute them to cleavage in the granite where some quartz or quartzose veins or perhaps micacious veins occur. The absence, so far as I can see, of any old moraines leaves the glacier question very doubtful. If any remnants of a moraine were found at the base of Wilkinson's Valley, the matter might fairly be considered settled, but unless this be the case there seems to me not much ground for it. The aspect of Wilkinson's Valley undoubtedly favors a glacial formation, but then in my opinion the moraine should also be there. It was not within the scope of my researches to spend any time over this interesting question, but a few days' careful examination and search in the right places would, I believe, settle the matter beyond dispute.

My first night camping near Pretty Point was again very unpleasant, the strong wind blowing the tent down and breaking the ridge-pole. After a perishing night the sun rose bright, and the wind abated considerably, I therefore selected a better sheltered place, and improved it by a breakwind made of felled trees. This precaution made me fairly comfortable for the remainder of my stay at this camp, from the 7th to the 23rd March. As anticipated this place proved a fine collecting ground, and it is not likely a better locality could be found in the ranges. Forest scrub, swamp, plains, and small watercourses are more or less approximate, and only for the lateness of the season I should have done still better. Here I obtained the greater number of my Alpine *Lepidoptera*, and also many interesting *Coleoptera*, besides many specimens of other orders of insects. The only species

of *Mus* obtained by me was caught here in my tent. But perhaps the most interesting contribution to my Collection was made on Sunday, 10th March, in the shape of a specimen of *Peripatus*. This interesting find was later on augmented by two others, and one specimen was obtained on the 19th at an elevation of at least 5,700 feet. This is the highest altitude at which I obtained this interesting Myriapod, and as far as I am aware none have been previously found at such an elevation. It must be remembered that this locality for at least from four to five months is frequently covered with several feet of snow. During my stay there I experienced several frosty nights.

After a few rough and cold nights, which made insects very scarce, I shifted on the 23rd of March to a well sheltered place called Wilson's Valley, at an altitude of about 5,000 feet, and stayed there for the remainder of my time. Being favored with exceptionally fine weather for the time of the year, I was lucky enough to obtain in this locality many fine insects, particularly some interesting *Coleoptera*, *Diptera*, &c., and the greater number of the *Peripatus* was also obtained here, but only one variety which I did not get amongst the four specimens from the higher altitude. There are in my opinion three distinct species in the collection brought by me, and one doubtful species or variety. In this place were also obtained a good number of Planarian worms, and some Mollusks, including an interesting (most likely new) naked species.

The comparatively short stay amongst the mountains scarcely enabled me to thoroughly explore even those parts of the immediate neighbourhood of my camping places, and still less the whole of the mountain ranges. If with this is taken into consideration that my collections are made from the autumnal fauna, and that I secured none of those animals that make their appearance in spring or early summer, it stands to reason that the result of my captures cannot give anything like a fair representation of the extremely interesting mountain fauna. Considering that the Kosciusko plateau alone is estimated to contain upwards of 160 square miles, there is an immense tract of country still waiting for a thorough zoological examination. Already vast stretches of country are annually burnt off to improve the pasturage, and during summer, when through the devastation of forests, the water gets scarcer in the low lying parts, and consequently the pasturage parched up, the mountains will be more resorted to.

The finish of my trip, like the beginning, was a wet one. Rain just started the morning of the day I had appointed to break up camp, and lasted for several days, giving me some trouble to get things dry again. It is, however, very satisfactory to me to be able to report that in spite of this and of rough coaching over some 75 miles, I have brought all my collections without mishap to Sydney.